

pyrexia; he has passed urine, the vomiting and diarrhoea have practically stopped, and no anxiety is felt either by the friends or the physician, but the patient has little desire for food and his friends do not insist on his taking it; and so day by day less nourishment is taken. The patient does not complain of any discomfort, and he still gives a prompt and cheery response to inquiries for his welfare. After a few days a certain delay is noticed in the response; the patient is far from being comatose, he is only a little lethargic. Once the doctor's attention is aroused, inquiry reveals the fact that only little fluid is being ingested and that still less, if any, is being excreted. Prompt treatment will probably save the patient, but if this earliest symptom—the delayed response—is neglected, the results may be fatal. Treatment must be directed to the cupping of the kidneys and to getting plenty of fluid into body; fluid foods at frequent intervals and enemata must be insisted upon.

I cannot close without expressing my indebtedness both to my senior colleague, Dr. Alexander Lyall, and to Dr. Chalmers of Swabue—to Dr. Lyall for his invaluable help and advice in the treatment of the more serious cases and for his kindness in setting me free from the routine work of the hospital throughout the epidemic, and to Dr. Chalmers for carrying on the treatment during my temporary absence from Swatow.

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THE ADMINISTRATIVE CONTROL OF MEASLES.

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DISCUSSION at a recent meeting of the Central Council for District Nursing in London, and the circular letter of the Local Government Board issued on March 31st, 1915, are signs that measles as a potent cause of death in the young is again the subject of official and unofficial concern. It may be interesting to review briefly some past experiences in the effort to control its ravages. For many years public health officials have been fully alive to the problem, as official reports and the proceedings of various medical and sanitary societies testify. No doubt these records will be carefully considered in the formulation of new schemes for dealing with measles.

Perhaps the earliest systematic effort to compile and sift the methods of control adopted by various local authorities was made by Thomson in 1894-5. The practice in 33 districts where measles had been notifiable was made the subject of minute inquiry, which resulted in the advocacy of notification. But he admitted the futility of notification unless it was supported by an adequate epidemic staff, rigorous search for unnotified cases, hospital treatment, judicious employment of school closure and other machinery for bringing the health department into the closest touch with measles at every point. The result of a

somewhat similar collation of evidence is embodied in an annual report by the Medical Officer of Aberdeen. In reply to his inquiries none of the medical officers of districts where measles was notifiable were able to adduce convincing evidence of gain, but in some instances the feeling was nevertheless strongly in its favour.

Experiments in the notification of measles have probably been carried out on a larger scale in Scotland than elsewhere. For Aberdeen the records are more than usually detailed. Measles was notifiable in Edinburgh also from 1880-1902, at the end of which period the medical officer was reluctantly compelled to admit practical failure. The more elaborate investigations of Aberdeen, carried out by Hay and Wilson, ended in the same conclusion.

Notification of measles has been in force since 1892 in Renfrewshire. All the conditions of success laid down by Thomson, except hospital treatment, have been rigorously observed. There has been no evidence that more cases of measles than of other infectious diseases have been missed. The information thus acquired has been for some time the subject of study (the results of which are as yet unpublished) by the writer. It may be appropriate here to mention briefly some of the points which have emerged in relation to the value of notification.

At the outset it is obvious that the absence of notification in other comparable areas deprives us of the very information required as a control to the Renfrewshire figures. Moreover, since the introduction of notification was practically synchronous with the commencement of county public health administration in Scotland, statistics for comparison with the past are not available. We are confined to a comparison of death returns in Renfrewshire and adjacent counties where measles is not notifiable. The mean annual death-rates from measles per 100,000 of the population in the Western Lowland Counties of Scotland, 1893-1912, are as follows:

Renfrew	...	...	...	...	21.04
Stirling	...	...	...	...	30.56
Dumbarton	...	...	...	...	30.50
Ayr	...	...	...	...	25.04

A chart of the biennial death-rates from measles in these counties since 1891 demonstrates that a decline has occurred in every case. The rate for Renfrewshire in 1891-2 was by far the highest, and that for Ayrshire least. In Renfrewshire a very sudden drop occurred in 1893-4, and continued in 1895-6, since when the curve has run at a lower level than the others. In Stirlingshire and Dumbartonshire a sharp rise took place in 1893-4, followed by a steep fall in 1895-6. Since that time the curves have been more or less parallel with that of Renfrewshire, but always at a higher level. The curve for Ayrshire runs a course more nearly horizontal.

Of the uniformly notifiable diseases, scarlet fever is less different from measles in its characteristics than any of the others. The proportions of deaths from measles per 100 deaths from scarlet fever in the four counties, 1893-1912, are as follows:

Renfrew	...	...	...	...	176
Stirling	...	...	...	...	225
Dumbarton	...	...	...	...	398
Ayr	...	...	...	...	222

Port Glasgow is an industrial town in Renfrewshire. Measles had been compulsorily notifiable there since October, 1898, and the campaign has been conducted on the same energetic lines as in the county. Port Glasgow is continuous with one end of the larger town of Greenock, where compulsory notification is not in force. A chart of the mean biennial death-rates from measles in these towns from 1891-2 to 1909-10 reveals a great and practically continuous decline of the measles death-rate in Port Glasgow since 1893-4, and a similar descent for Greenock since 1897-8. The trend of the curve is somewhat steeper in Port Glasgow, and, from being almost uniformly higher in the first three biennia, it has run consistently at a lower level in the last three. It will be noted that the fall commenced in Port Glasgow before measles became notifiable. In Port Glasgow the mean of the annual death-rates in the second decennium is 60.9 per cent. lower than that for the first. The corresponding percentage for Greenock is 49.2.

None of these sets of figures afford fit basis for conclusive arguments, but, taken altogether, they show some

evidence in favour of the notification of measles both in a county area and in an industrial town.

It has been strongly urged by Campbell Munro that one of the great advantages of notification is the early information it affords on which to base school closure. He has adduced numerous instances from his experience in Renfrewshire, Port Glasgow, and Jarrow-on-Tyne, of the efficacy of notification and school closure, both in his annual reports and elsewhere. Körösy, Kingsford, and others have discussed the influence of the normal holiday closure, the former regarding the effect as important, Kingsford rather inclining to scepticism. According to Gilmour, the value of school closure depends largely on the better social class of the scholars. The statistical investigations of Brownlee on the inherent tendency of epidemics to end themselves, and on rhythmic variability in the power of the virus to infect, require to be considered in drawing conclusions from all such experiments on the controlling of epidemics. He emphasizes the importance of these two factors, the former having been indicated originally by Farr and discussed, along with influences of season and susceptible population, by Ransome.

Considered over a number of years effectual school closure should reduce the case-rate; delay the age of attack, and so reduce the case-mortality; and diminish the volume of biennial epidemics. As a matter of fact, comparing the decennia 1893-1902 and 1903-1912 in Renfrewshire, one finds a fall in the mean annual case-rate of only 7.6 per cent., whereas the case-mortality has dropped by 32.0 per cent. That the lower case-mortality is not due to protection of young children from infection is shown by the fact that the mean annual case-rate under 3 years of age has fallen only 5.6 per cent., while the case-mortality at these ages has declined by 30.3 per cent. The mean age of all cases under 20 years of age has actually fallen from 5.56 years to 5.41 years. No doubt part of the disproportion is the result of imperfect notification in the early years. Again, if the years considered are periods of twelve months from September to August, the biennial fluctuation of cases is more pronounced in the six years 1907-1912 than ever previously. It would appear that some factor has come into play which has tended to reduce the fatality more than the incidence of the disease. Whether it has been the educative campaign associated with notification, or improved social conditions, or increasing immunity by selection, or a natural variation of the disease, it is not possible to decide in the absence of mortality statistics elsewhere.

In order to delay the age of attack Sykes made a strong plea for raising the age of school entrance. This might save a certain number of children, but it is difficult to see how it would materially affect the children at ages when measles is most fatal—that is, under 3 years.

Hospital treatment has been advocated in many quarters, notably in Glasgow and Kensington, and by Thomson. The difficulty of treating in hospital any serious proportion of cases of a disease like measles, which flares out in epidemics, has been generally recognized. In Glasgow hospital treatment has been adopted on a large scale for many years. And yet the curves of death-rates from 1893 to 1912 in Glasgow and in Lanarkshire, which encircles the city and has never offered hospital treatment to any extent, are remarkably similar in their trend. The influence of hospital treatment on chronic sequelae can hardly be measured, but it is probably important. On the other hand, the risk of infectious bronchopneumonia is increased.

Home visitation by trained nurses is now receiving official countenance. The educative effect and the prevention of sequelae may be valuable. It cannot have much influence on the spread of infection, and probably little upon the immediate fatality of the disease. Indeed, it is highly improbable that any measure short of the production of artificial immunity will have much influence on measles. The work of Anderson and Goldberger holds out hope that the discovery of the organism may yet lead to its administration in some attenuated form. Meanwhile, any advance in the administrative measures for dealing with measles is a move in the right direction, and must be based on accurate information, such as compulsory notification affords.

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UNIVERSAL SUSPENSION APPARATUS FOR ARM AND LEG.

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ARM.

This is composed of a movable wooden top and a fixed wooden perpendicular (Figs. 1 and 2).

The lower perpendicular pole, L.P. (2 in. by 2½ in.), 5 ft. in length, is fastened to the top of the bed by means of a flat bit of timber, F (4 in. by 1 in.) 2 ft. 4 in. long, bolted with two bolts to the pole, with bed head rail between them, on the extreme right or left of bed.

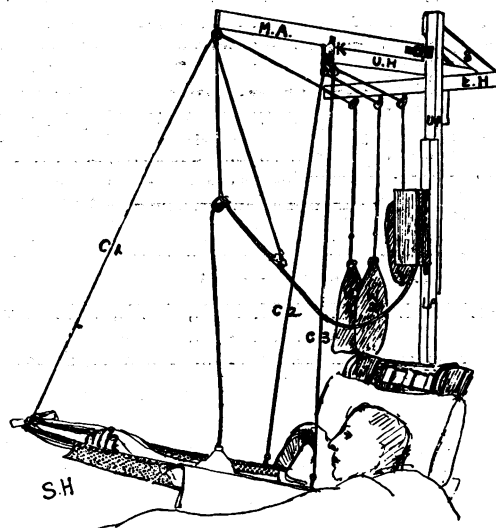


Fig. 1 (from a photograph).—Showing arm suspension applied.

This pole, L.P., has two sets of hinges, anterior and posterior, to enable it to be used for right or left arm— anterior for left, and posterior for right. These hinges are set at 15 in. apart, the upper hinge being 4 in. from the top of pole L.P. They also allow the top to swing 180 degrees.

The hinges are composed of two parts (Fig. 3), thus allowing the top to be easily moved when the suspension is required for right or left arm, as the case may be.

By this method two male parts are fixed to the upper perpendicular, U.P., and four female parts to the lower perpendicular, L.P. In alternate suspensions male and female parts are reversed.

The top has a perpendicular part, U.P., and carries two